

## ABSTRACT

There is disclosed a bone substitute material for medical use which satisfies all the requirements of (1) no histotoxicity, (2) osteoconductivity, (3) bone replacement capability, and (4) mechanical strength necessary for a bone reconstruction operation. The bone substitute material for medical use is predominantly composed of carbonate apatite and produced through the formation of carbonate apatite by contacting a block of calcium compound with a phosphate-containing solution, wherein the calcium compound block contains substantially no powders, and at least one of said calcium compound block and said phosphate solution contains a carbonate group, without any sintering. The block of calcium compound is preferably one prepared using an artificially synthesized calcium compound, most preferably a foamed calcium compound.